



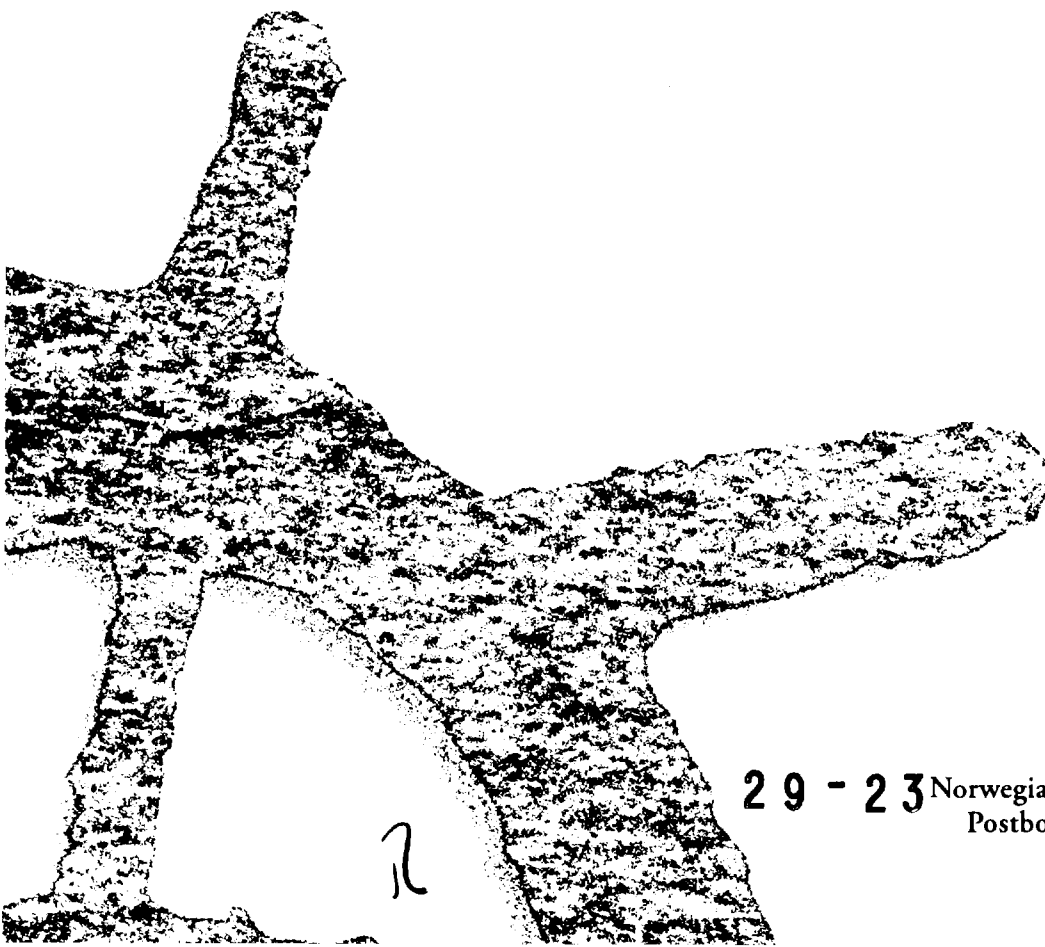
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Information strategy and information products in radiation protection.

A Norwegian RISKPERCOM study.

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29 - 23



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Abstract:

A short description of the national background for the radiation issue is presented together with a presentation of information strategy and analysis of the information products of the Norwegian Radiation Protection Authority. This is part of an international study.

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Reitan JB, Tønnessen T, Waldahl R: Information strategy and information products in radiation protection. A Norwegian RISKPERCOM study. StrålevernRapport 1998:2. Østerås: Statens strålevern, 1998. Språk: Engelsk.

Emneord:

Informasjon, strategi, stråling, nukleær, Tsjernobyl, produkter.

Sammendrag:

Det gis en kort bakgrunnsbeskrivelse for problemområdet stråling på nasjonalt grunnlag, samt en fremstilling av informasjonsstrategien og informasjonsprodukter fra Statens strålevern. Denne studien er en del av et internasjonalt prosjekt.

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SUMMARY

This report gives a short overview of the radiation concerns in public debate in Norway, as a base for how to inform the public about radiation matters. The information strategy of the Norwegian Radiation Protection Authority is reviewed through an interview with the Head of information, and with reference to the main principles of Norway's Central Government information policy. A content analysis of information products from the authority is also reported. It seems to be a fair agreement between information intentions and practice, maybe partly excluding crisis information, where some principles may be too idealistic.

SAMMENDRAG

Denne rapporten gir en kort oversikt over stråling som offentlig emne i Norge, som et grunnlag for hvordan informere offentligheten om strålingsforhold. Informasjonsstrategien til Statens strålevern er belyst ved et intervju med informasjonssjefen, og med henvisning til hovedprinsippene i Regjeringens informasjonspolitik. En innholdsanalyse av informasjonsprodukter fra Strålevernet blir også presentert. Det synes å være bra samsvar mellom prinsipiell målsetning og realiteter, kanskje bortsett fra kriseinformasjon hvor enkelte prinsipper kan bli for idealistiske.

ACKNOWLEDGMENTS ETC.

RISKPERCOM is a European Commission sponsored project (contract no. F14P-T95-0016, DG12-WSMW) involving UK, France, Spain, Norway and Sweden, and coordinated by L. Sjöberg, Sweden. This case study is financed by a grant from the Norwegian Research Council. The authors are grateful for comments and ideas from various colleagues and scientists, especially from partners and coworkers in the RISKPERCOM group. Martin Stølevik *MSc* and Tor-Arne Vilnes *MA* coded the material and contributed in different other ways. The views expressed in this report are those of the authors and do not necessarily represent any official views, decisions or stated policy of the NRPA as such.

Three of the other national groups have also made case reports on the same topic. These are reports by af Wåhlberg (1997) from Sweden, Mays & Egouy (1998) from France, and Menard *et al* (1998) from Spain. The bibliographical references may be found in the References section in this report.

ANERKJENNELSER M.M.

RISKPERCOM er et prosjekt støttet av den Europeiske kommisjon (kontrakt F14P-T95-0016, DG12-WSMW) omfattende Storbritannia, Frankrike, Spania, Norge og Sverige, og som koordineres av L. Sjöberg, Sverige. Denne del av prosjektet er finansiert ved et forskningsbidrag fra Norges Forskningsråd. Forfatterne takker for kommentarer og ideer fra flere kolleger og forskere, spesielt fra partnere og medarbeidere innen RISKPERCOM-gruppen. Sivilingeniør Martin Stølevik og informasjonskandidat Tor-Arne Vilnes kodet materialet og bidro på forskjellige andre måter. Synspunkter i denne rapporten er forfatternes og representerer ikke nødvendigvis noe offisielt syn, beslutning eller policy for Statens strålevern som etat.

Tre av de andre landenes grupper har også laget rapporter om samme emne. Dette er rapporter av af Wåhlberg (1997) fra Sverige, Mays & Egouy (1998) fra Frankrike, og Menard *et al* (1998) fra Spania. De bibliografiske referanser finnes i referanseavsnittet i denne rapporten.

INTRODUCTION

Radiation has always been a part of the natural environment, and man has always been irradiated. However, except for termic and optic radiation (heat and light), radiation was unknown until the discoveries by Röntgen and Becquerel a century ago. Radiation can not be felt, smelled or tasted, and in the health context we can not as usual quote knowledge and opinions back to Hippocrates.

Studies from early in this century, and especially the experiences after Hiroshima and Nagasaki, have proved that radiation may carry a risk of unwanted health effects. The atomic bomb and nuclear technology in general is often associated with strong symbolic values. The public concern has further increased due to e.g. the Chernobyl nuclear power plant accident, and radiation risks are at present considered serious by the Norwegian public (Tønnessen *et al* 1995). Although risks are part of everyday life, some of them are more well known than others, some beyond our realm of personal experience. For the latter the mass media may serve as an important link by generating and shaping our awareness.

The RISKPERCOM¹ project is concerned with these and other related problems. More specifically, the project aims at surveying public perceptions of radiation related and other risks. As a part of the project it was decided to make case studies in four of the participant countries, of the information strategies and information products of the radiation and nuclear authorities. The studies intend to use a common frame regarding research goals and methods, for later analysis of similarities and differences between the countries. This report is covering the Norwegian part. The relevant Norwegian agency is the Norwegian Radiation Protection Authority (NRPA), which is also the Norwegian partner in the RISKPERCOM project. It is a methodological problem that two of the authors are employees at the authority. Nevertheless, some conclusions may be drawn, and close contacts with partners in the other countries probably reduces the problems with position of dependence. The main objective of this study is to check how well the objectives of the communication strategy are transmitted through the information from the institution.

MATERIAL AND METHODS

General method of research

This national part comprises the following sections:

- * A description of the national background on the radiation issue.
- * A description of the agency in question.
- * Description of the studied agency's information strategy.
- * Content analysis of the information products (according to a structured coding scheme) for two time periods of five months each: January - May of 1996 and 1997.

¹ RISKPERCOM is a European Commission sponsored project (contract no. F14P-T95-0016, DG12-WSMW) involving UK, France, Spain, Norway and Sweden, and coordinated by L. Sjöberg, Sweden. It studies risk perception and communication, in particular radiation risk, partly in connection with the 1996 ten year commemoration of the Chernobyl accident. The Norwegian partner is the Norwegian Radiation Protection Authority. The Norwegian part is financed by a grant (contract no. 113353/720) from the Norwegian Research Council. Several reports are planned. One Norwegian report on print media coverage of the 10 year Chernobyl commemoration has already been published: Nilsson Å *et al*: StrålevernRapport 1997:8, ISSN 0804-4910, Østerås 1997.

The crossnational comparative study is later expected to include

- * comparison of the information strategy and information products of the agencies.

The international project group developed the coding scheme used (see Appendix II). It bears some resemblance to the previous media-coding scheme of the RISKPERCOM project (Nilsson *et al* 1997), some categories being the same, to facilitate later interstudy comparison. The time periods were chosen to enable a comparison between the year of the Chernobyl 10 year commemoration with a normal year. To complete the printed material on information strategy, an interview was made with the Head of information at NRPA.

«The radiation issue»: Radiation concerns in Norway

Radiation information must take into account the general public knowledge, attitudes and concerns about radiation matters. This situation may differ considerably from country to country. The other partner countries in the RISKPERCOM project are all countries more or less dependent on nuclear power, whereas Norway does not have nuclear power stations. In other contexts, e.g. regarding medical use of radiation, the situation may be more in common.

The public concern in Norway for radiation issues has varied during different periods. At present, the main issues as nuclear pollution and accidents are in general considered as problems and risks. In other periods, more optimistic values as progress, welfare maximation and technology development have been in focus. As politics have changed, environmental concerns have been more widespread, and international events have occurred, there are of course different attitudes to radiation issues in different segments of the population. A short historic summary may nevertheless be pertinent.

The period from 1896 to ca.1960

Radiation research started in Norway early after the discoveries by Röntgen and Becquerel². The first dedicated medical X-ray unit was installed in 1897, and the first radiological department (at the National Hospital) was established in 1898. Shortly after, the Norwegian chemist Ellen Gleditsch (1879-1968) was appointed assistant to Marie Curie in Paris, and became later Norway's first professor in radiation chemistry. Due to her contacts, radium was made available for radiotherapy in Norway as early as 1913. The Norwegian Radium Hospital was eventually opened in 1932 financed by a public subscription. In 1927 the Norwegian ingeneer Rolf Widerøe (1902-1996) developed the principles for both the Betatron and the linear accellerator, which were further developed in Switzerland. A 1,5 MeV Van de Graaff generator was built by Odd Dahl (1898-1994) in Bergen in 1939-41 for the purpose of radiotherapy, at that time the largest dedicated medical apparatus in the world. In 1952 a Swiss Betatron was installed at The Norwegian Radium Hospital, the second in operation in Europe.

Kristian Birkeland (1867-1917), the physicist behind the hydroelectric production of nitrous fertilizers, tried in 1906 to rise funds for research on «extraction» and utilisation of atomic

² Kristian Birkeland (from 1898 professor of physics at the University of Oslo) made the first demonstration of X-rays the same year. He regretted later that he had not published his own experiments done some months earlier than Röntgen's: «I could clearly see the bones of my hand. I showed my experiments to professor Schiøtz (physics) and professor Torup (physiology) but they just shrugged their shoulders» (Egeland 1994). Professor Torup lectured in March 1896 about «The Röntgen rays and photography of invisible objects» in The Norwegian Medical Society, shortly after a demonstration of X-ray images by Dr. Johannessen.

energy by «dissolving the atomic mass», based on « a nice discovery I have made». This discovery is not known, but it is impressing with such an idea many years before the theories by Rutherford and Bohr (Egeland 1994). Quite a lot of physics radiation research was done at the University of Oslo up to the 2nd world war, and with extensive international contacts.

After the end of the war, the reconstruction of the country was enthusiastically supported by the population. The halt of the nuclear and radiation development during the war ended, and scientists returning from exile advocated for nuclear technology. In 1946 the Norwegian defence research establishment (FFI) at Kjeller was founded, and in 1948 the Institute of atomic energy (IFA) was established close by and with fairly close contacts (Forland 1987). In 1951, the first Norwegian nuclear heavy water reactor (Jeep 1) was commissioned, the second reactor to be run in Europe³. The work was led by Odd Dahl mentioned above, who later was heading the planning group for the accelerator at CERN in Geneva. In 1959 the reactor in Halden was commissioned, now known as the OECD Halden Reactor Project. Even after the losses during the war, Norway operated the third largest mercantile marine in the world, and was actively exploring the possibilities for nuclear ships. For a nation of some 4 million inhabitants and with limited resources after the war, the radiation research and development programs in Norway were substantial. The nuclear and radiological technology knowledge was high for the time, and the base for development of a nuclear industry was truly realistic.

Up to the end of the fifties, the radiation issue in Norway and the general attitude was that of technology optimism, despite the grave impressions from the bombing of Hiroshima and Nagasaki. However, the atmospheric testing of nuclear arms, especially the Soviet tests at Novaya Zemlya, gave considerable nuclear fallout in Norway from around 1955. This first period from 1896 therefore ended with increasing public uncertainty of the unequivocal benefits of nuclear technology.

The period from ca.1960 to 1986

A measurement program of the nuclear bomb test fallout was started in the late 50s by FFI, initially in secret, but soon with published results (Njølstad 1996). The Norwegian government made diplomatic efforts to stop the testing, and the problem was heavily debated in the Parliament. Extensive surveillance of the fallout was kept running until the late 70s. The Limited test ban treaty in 1963 put an end to the testing, but the deposits and continuing fallout are still in 1997 a problem in the northern parts of Norway, due not least to accumulation through the lichen-reindeer-man pathway.

³ Production of deuteriumoxide (heavy water) for the use in nuclear technologies had been started before the war at the Vemork plant at Rjukan. Shortly before the German invasion in Norway in 1940, substantial quantities of heavy water was «lended» to France, apparently coupled with the Joliot-Curie 1939 patented heavy water nuclear reactor project. The destruction of the Vemork plant by saboteurs in 1943 and sinking of a large transport of heavy water in 1944 were some of the most spectacular secret agents' operations during the war, aiming to halt the suspected German nuclear arms program. The history of the international cooperation behind IFA in the period up to 1951 reads like a thriller. The Norwegian war allies USA and UK tried to monopolise uranium supply and did not allow the desired cooperation. French efforts for a European nuclear program, based on a French-Norwegian cooperation and separated from the US/UK and Russian programs, were controversial in Norway (maybe partly due to Joliot-Curie's political conviction). Finally a cooperation with Dutch interests resulted in the scientifically open nuclear institute IFA (Forland 1987).

Shortly after Norway joined the NATO, it was in 1949 decided not to allow foreign military bases in Norway. In 1961 this was further underlined by not allowing nuclear weapons to be stored in Norway in peacetime. These decisions were not very popular in the alliance, but parts of the national political establishment were impressed and shaken by the prospects of nuclear armament and war. Fear of radiation, and skepticism against the military-industrial complex, became important public concerns. The Institute of atomic energy continued working with plans for Norwegian nuclear power, but the advanced plans were met with increasing skepticism.

In 1980 the Norwegian Parliament finally decided to abandon the nuclear energy program⁴. This was of course possible because of the huge hydroelectric power resources in the country. Later uncovering of enormous oil resources in the North Sea has further reduced the need for any Norwegian nuclear energy program. At about the same time, optimistic prospects for chemotherapy in the treatment of cancer made radiotherapy less attractive as a research area. The test ban treaty, the decision not to build nuclear power stations, reduced enthusiasm for radiotherapy, and the decline in public interest in radiation matters in general, all contributed to a fragmentation of the previous strong scientific milieu and consciousness. Thus, by the time of the Chernobyl accident, the authorities, the scientists and the public were rather unprepared. This resulted in various contradictory information given from different sources, leading to an information crisis (Hernes *et al* 1986).

The period after 1986

The Chernobyl accident resulted in widespread nuclear pollution in Norway, with need for extensive countermeasures. The accident highlighted the need for nuclear accident preparedness and competent scientists even in a non-nuclear nation, and public concern increased significantly. Since the dismantling of the Soviet union, the Norwegian insight into Russian environmental problems has increased tremendously. Huge problems with civil and military nuclear installations, radioactive waste, and disintegration of security systems have been identified, and have been debated in the newspapers. For Norway, the Kola peninsula represents a special concern⁵. Both the Chernobyl accident and these new data have prompted Norway to establish a rather large Nuclear accident preparedness system (Naadland & Stranden 1995), and Norway is in addition spending nearly 15 million US \$ yearly to increase nuclear safety at Kola. Therefore the public concern for radiation and nuclear issues is at the moment more or less the same as concern about accidents and nuclear preparedness systems.

⁴ The Parliament debated nuclear power after a governmental Statement to the Parliament (73/74:100) in 1975. A majority could be found neither for the construction of nuclear power stations, nor to veto such plants. The governmental Granli commission on Nuclear power and safety was eventually appointed. It had a majority in favor of nuclear plants, but proposed extensive security measures in their public report NOU 1978:35a. This view was forwarded in another Statement to the Parliament (79/80:54), in which the government stated that a majority in the Parliament for building of such stations could not be raised this side of the millennium. By not raising a debate on the statement, the Parliament brought this to pass (Olav Njølstad: Personal communication 1997).

⁵ The Kola peninsula is a northern part of Russia with a common border with Finnmark county in Norway. The main city at Kola is Murmansk, the center of the Russian northern fleet with nuclear submarines, and with other large military installations. In addition, a nuclear power station and substantial nuclear waste is located in the area. Other types of pollution e.g. from the nickel refinery in Nikel is contributing to serious environmental problems. Historically, good contact was kept between Norwegians and Russians, and included the so called Pomor trade. But in the Soviet time this was a tense NATO-Soviet border. The project group behind this report is also doing research at Kola on environmental and living condition problems, including radiation matters.

However, the daily life radiation problems persist and are major tasks for the NRPA, although not of the same interest in the media. New problems with high voltage power lines, mobile telephones and suntanning are adding to the quality control optimization of radiation technologies in medicine and industry. In general, non-ionizing radiation technologies are used extensively in modern societies, and many inquiries are raised to the NRPA. About 2/3 of the Norwegian population regard health effects as a likely consequence of exposure to electromagnetic fields from power lines. As a source of radiation, power lines and radon are on the same level of concern, only superseded by radioactive fallout and waste (Mærli 1996). Thus, the «radiation issue» is at present in Norway a mixture of concerns, for radioactivity and radiation, nuclear emergencies, and different types of non-ionizing radiation.

Norwegian Radiation Protection Authority

The Norwegian Radiation Protection Authority (NRPA) is the competent national authority in the area of radiation protection and nuclear safety in Norway⁶. It was organized in 1993 by merging the former National Institute of Radiation Hygiene (NIRH) and the former Norwegian Nuclear Energy Safety Authority (NNESA). NNESA was organized in 1973 for the purpose of the expected construction and operation of Norwegian nuclear power plants. The NIRH (or its predecessor) was established in 1939 mainly for the purpose of radiation protection in medicine. Expansions of NIRH with duties of industry and environmental issues were gradually introduced in the 50s and 60s, and a medical/radiobiological section was added. (For an overview of the development of Norwegian radiation protection, see e.g. Reitan & Saxebøl 1995). NRPA is responsible for nuclear and radiation (both ionizing and non-ionizing) issues by

- overseeing the use of radioactive substances and fissile materials
- coordinating contingency plans against nuclear accidents and radioactive fallout
- monitoring natural and artificial radiation in the environment and at the workplace
- contributing to an optimized use of radiation, especially in medical practice
- increasing our knowledge of the occurrence, risks and effects of radiation in a broad sense.

The NRPA is both a governmental agency with extensive administrative duties, and a research institution. It is organized under the Ministry of Health and Social Affairs, but provides assistance to all ministries on matters dealing with radiation, radiation protection and nuclear safety. Radiation protection is a field of administration which calls on resources from the physical, medical and biological sciences, and administrative practices are to a large degree based on international recommendations.

NRPA is organized into 5 departments: Department of administration, of environment, of health physics, of nuclear safety and preparedness, and of radiation medicine. The majority of the professionals are physicists, chemists or engineers; a few have background as physicians, biologists or social scientists. The Director General is a biophysicist, the Head of information a journalist. The total number of employees, including engagements, is at the moment 98.

NRPA monitors all use of radioactive materials in medicine, industry and research, as well as the operation of all research reactors in Norway. These are tasks which present new challenges

⁶ The following description consists mainly of citations from several information products of the NRPA, and has been reviewed by the Head of information.

at every turn. This applies in particular to the responsibility for the standard of internal audits and quality control programmes maintained by the institutions monitored.

Contingency plans for nuclear emergencies as well as accident-prevention efforts at nuclear installations are part of the NRPA's strategy for reducing risks (for a detailed description, see Naadland & Stranden 1995). These measures are reinforced by the special Governmental program of action for nuclear safety and the environment, which is oriented specifically towards the situation in northwestern Russia.

Although radiation e.g. in medicine and nuclear matters are central issues, it should be emphasized that non-ionizing radiation is posing increasing problems and concerns, and is a major research and information area.

Information strategy

The information strategy of the Norwegian Radiation Protection Authority is not described in detail in any document, but a process for this is underway. As a governmental agency, the NRPA's planning, realisation and evaluation of information must take the aims and principles of central government information as its point of departure. These are based on five principles: The two-way communication principle, the use of an active information strategy, comprehensiveness, line management of information, and management's information responsibility. A brief presentation of the Norwegian government's central information policy is found in Annex I. The adaptation of this strategy in the NRPA was described during the interview with the Head of information. In this interview, other aspects of the communication to and from the NRPA were also covered.

Information products

The material considered for coding was classified according to the scheme mentioned above, and contained printed material such as press releases, press files (dossiers etc.), reports to the public, reports to the scientific community, newsletters and press reviews. Press seminars were also considered, together with documents to administrations, decision makers and governmental bodies, and some other materials not classifiable.

The coding was done by two persons outside the project group, but still employed at the NRPA. This may be a methodological weakness, on the other hand securing understanding of the material. The sender perspective was focused upon for coding (in accordance with the aim to trace sender intentions of the information policy), and not necessarily the receiver perspective. The problems mentioned later regarding coder evaluations of TONE may have been affected by this fact.

It must be stressed that large volume of information on the basis on request from individuals is mainly handled through telephone and letters, and is not covered in this study.

RESULTS

Interview with the Head of information of the NRPA⁷

A semistructured interview with the Head of information of the NRPA was performed by RW with assistance from AT and JBR on September 26 1997. The interview-guide was prepared after discussions among the authors. In the beginning, we informed the interviewee about the RISKPERCOM project and the current subproject in particular, before asking about the information policy of the NRPA.

Responsibility

The Head of information is not a press spokesman and in principle does not comment issues on his own authority. Specific comments are provided by the scientist or project manager him/herself. In cases considered as policy questions, the Director general will give statements and comments. The role of the Head of information is to assist the media with background information and contact with relevant persons. The Head of information is also responsible for intraagency information. The problems and routines of the intra-agency information have been assessed by survey studies within the organisation, and a data Intranet has been established. The organisation to be served (NRPA) has in total about 90 employees.

Strategy

The NRPA has no written information strategy, but this is scheduled to be completed by June 1998. However, as a part of the central administration, NRPA takes the governmental information strategy as its point of departure. Of the 5 main principles (Annex I), the Head of information points to the communication principle and the line management principle as the most important. The first shall ensure a dialogue with the target groups (professionals and agencies), the second that the information shall be given by those in charge. The latter principle does to some extent reduce the responsibility of the Information unit. However, these guidelines may be difficult to translate into the real situation in practice. It is also a matter of resources, and not every NRPA employee feels comfortable with the communication tasks implied.

NRPA is both a governmental agency (with a right and duty to forward «authorized» messages) and a scientific unit (and there will often be scientific controversies and disagreements). As a scientific unit, NRPA cannot have authorized solutions to scientific uncertainty, and it may be debated whether the information policy principles are suited for research institutes and universities. Therefore a distinction must be made between the two aspects of the NRPA as an authority and as a scientific institution. This may be rather difficult in practice. In many national and international agencies it is vital to quote sentences like «This report contains the ... views of and does not necessarily represent the decisions or the stated policy of ... »⁸ or equivalents. This is however not regularly practiced in NRPA, but discrepancies in views between the agency and the individual scientists are probably minimal. Reports are generally checked for quality, but it is not interfered with the scientific views of the authors. In some publications representing policy, the content and views are also checked,

⁷ This text version has been approved by the Head of information.

⁸ Cited from Techn Rep Series 689, WHO, Geneva 1983

in these publications, however, authors are generally not mentioned. But in the end it is the Director general who decides on policy questions, and it is the opinion of the Head of information that this also applies for views, judgements and general scientific conclusions as far as these are issued from the authority.

Resources

Three persons are working on a daily basis in the Information unit (5 more persons, formally employed within the unit, work at the library, in archiving and in reception). In cases of severe emergencies (after mobilization according to the Nuclear emergency preparedness plan) a total of 52 persons will be attached. These persons are recruited from information departments of other agencies represented in the Nuclear emergency preparedness system. This group is headed by the Head of information. They have had some training exercises together.

The financial budget of the information unit does not reflect the total resources used for information at the NRPA. Information costs for the different projects are contained within their project or department budgets. Moreover, in cases of severe emergencies, large economic resources will be available from the ministries. On a daily basis, however, the budget amounts to 150 000 US \$ for 1997, which covers the salaries and activities of all 8 persons mentioned above (including the library etc.). The budget is considered insufficient by the Head of information.

Coordination with information activities of other agencies

In emergency situations, the information is coordinated through the Crisis committee of the Nuclear emergency preparedness system. This is a system coordinating several ministries and agencies relevant for nuclear emergencies, and is headed and operated by NRPA (Naadland & Stranden 1995). The Crisis committee is authorized not only to inform, but also to decide the content of the coordinated information from all participating agencies. This is to avoid the confusing media situation as seen after the Chernobyl accident, where different agencies issued different evaluations and statements.

The Head of information is attached to the Crisis committee in such situations. Under normal circumstances, the information office forms part of the NRPA Department of Administration, but with direct access to the Director General. The other agencies of the Crisis committee are expected to direct their own information. However, even in crises, the information unit will have to rely on resources in the other agencies, taking part in the direct first line public information action. An information collaborating group with 5 member agencies has regular meetings.

Other nuclear information actors

As a scientific institute, the NRPA has much in common with e.g. universities on one hand, and different professional societies, e.g. environmental organizations, on the other hand. In the university system, the information is intimately connected to the institutes and the scientists, whereas the university as such does not have any specific views. There is very little coordination of information within the universities and between the universities and the NRPA. Some environmental organizations, in particular the Bellona Environmental Foundation, are heavily engaged in nuclear matters. Bellona has become internationally

known for its report on the Russian Northern Fleet, and the case against Mr. Nikitin, a former Soviet submarine captain now engaged by the foundation. The Head of information regarded the actions from these organizations as a problematic challenge, because of the public opinion impact. It is considered important to inform about who are the authorities and who are not. This is attempted by information leaflets of the official Nuclear emergency preparedness system. Especially in the case of emergencies and crisis, the authorities have to be proactive rather than reactive, and therefore the system must be known to the best in advance. An evaluation of the public trust in NRPA was favorable in this respect (Haast 1996).

This does not mean that private organizations as e.g. Bellona do not have the right to inform, even if contrary to the view of the authorities. They have expert journalists, but are not the sole experts on nuclear matters in the Northern regions, which they partly seem to claim. Moreover, some information may be more difficult to give from a governmental agency due to political implications.

As collaboration partners, environmental organizations are seen as interesting due to their high impact in public opinion. The NRPA had an active collaboration with the Naturvernforbundet (Norwegian society for the conservation of nature) in 1996. NRPA has also collaborated with the teacher's organization regarding nuclear and radiation information in the schools.

Preferred information channels and targeting of information

The information unit of the NRPA does in general not inform the public directly, and the Head of information has no responsibility for information tailored to the individual. Individuals contacting the authority are generally answered by the professional in charge directly. Such direct contacts are often numerous and may represent a capacity problem. The main task of the Head of information is more to advise and arrange convenient contacts than to have an active informing role. His role is otherwise to assist the media with background data, and to be instrumental in establishing contacts with the relevant professional collaborators. The contacts with and relations to journalists and editorial staffs in the media are considered good.

The Head of information feels it is vital to separate the information issues of nuclear preparedness and of other situations. In the emergency situation, the channels are more coordinated and strict than in other situations, mainly directed to media and other secondary sources. However, during a crisis, a toll free number will be established for the service of the public. Under normal conditions, the initiative is often taken by the media. Otherwise press releases are used. In a survey study of the print media's views, NRPA is considered as an open and trustworthy agency. Very few of the employees have direct media contacts. The Head of information has made rules for communication with the media (regarding what types of information shall be given by the individual professional, and what shall be dealt with at Department director and other levels), and has broad contacts in press bureaus.

Lessons learned from a school information project together with the Teachers' organization are that information needs are very different in different segments of the population, especially affected by geographical factors. Major concerns in northern Norway (e.g. nuclear matters at the Kola peninsula) were not in focus in a southern county. Different people need information

on different things, but no real segmentation strategy for the external public information has been attempted.

Information leaflets in paper and internet versions addressing specific questions are prepared by the professionals. As examples may serve leaflets on risk (or lack of risk) of mobile telephones, on radiation safety in radiological departments in hospital, on radon in homes etc. These leaflets are checked for content, and are regularly not mentioning authors. A limiting factor to information product development of this type is the availability of the scientists. Such information products are often searched for by the public, but documentation of the use is generally lacking.

Controversial issues

NRPA is operating in an area considered by many to be controversial. For some issues the public knowledge may be abundant (even if grave misunderstandings and misconceptions may be present), for other issues the knowledge may be more or less nonexistent. Definite and unequivocal knowledge may also lack even for professionals, e.g. on the question of cancer risk of very low doses. It is an important task to collect information and spread to others. A survey study in 1996 seems to conclude that the general confidence in information from NRPA is good. Preferred confidence is not selfevident in situations with different attitudes, and NRPA accepts that opinions may diverge. However, NRPA can not, especially in cases of emergencies, act in a milieu with a bad image and has to actively try to establish a good reputation. Information before an emergency will have impact on attitudes during an accident.

Description of the Norwegian material

A descriptive statistical overview of the Norwegian material is found in Annex III. The data set is very small, so the possibility for valid further statistical analysis is limited. Moreover, the individual items of the total 25 items vary considerably in volume. On the extreme, one item represents a press seminar over 2 days with 32 participants (in 1996), another a half page press release.

In summary, however, it can be mentioned that the bulk consists of press releases and newsletters either below 500 words or above 1000 words, issued for information or reference purposes. Two items only were primarily related to the Chernobyl commemoration (but one of these was the large press seminar), although one third covered radiation accident preparedness in general, and nearly one third the same as a secondary theme. Most items were concentrating on pure description and technical details, and with no practical advice offered. The focus was mainly on domestic problems. The tone of the messages could not be judged, as 88% of the items were left uncoded for this issue. Thus, the TONE code did not function in the Norwegian material. The distribution on the different codes did not differ so much between 1996 and 1997, except for the coverage of Chernobyl (and partly radiation accident preparedness). These codes seem to be given in 1996 only.

The five main principles of Norway's Central Government information policy were difficult to trace directly from the content analysis of the material. The coding scheme was constructed mainly to match the media content analysis projects of RISKPERCOM, and was not found specially suitable for the information principle (Annex I) task.

DISCUSSION

The information from the NRPA shall follow Norway's central government information policy. This comprises the principal aims, the five main principles, and norms and rules for the implementation of central government policy. The main objective of this study is to examine to what extent the authority's information really follows these guidelines.

Principal aims

The principal aims of the information policy are to ensure that each resident and enterprise has genuine access to information on public sector activities, and that every resident is informed of his or her rights, obligations and opportunities to participate in the democratic process.

Audience segmentation

Audience segmentation for the purpose of advertising is common. No commercial firm will use resources to address irrelevant consumers. Public governmental information shall on the other hand be general and not be inaccessible by any target groups, but demographic factors as gender, occupation, social class, or other stratification as e.g. on personality, may be of importance. In cases of nuclear emergencies it is obvious that a mother of young children needs another type of information than a civil servant in a ministry. Different messages must be tailored to different receivers. Health information (and radiation protection information may be viewed as such) intended to change behaviour must meet the recipient «at home».

Norwegian women are apparently more concerned with radiation factors than men (Tønnessen *et al* 1995). There is obviously no «correct» level of radiation concern, so it is an open question whether women are too much worried or men too little, or both genders too much or too little. Fear appeals are shown to have persuasive potential and can promote better health (Hale & Dillard 1995), and otherwise neutral messages may have been interpreted as alarming. Thus, segments of the population may consider the information more or less alarming or more or less reassuring than intended by the sender. The bulk of the Norwegian material did not allow coding on the TONE variable (Annex I), and any «objective» scoring in relation to the code may be impossible. Content analysis of newspapers in Norway in the first period of this study clearly suggest that newspapers to a greater extent focused on alarming risks than on reassuring messages (Nilsson *et al* 1997). However, this was found not for radiation issues only, but for all types of risk, so the popular view that radiation issues are reported in a specially threatening way may be false.

Audience segmentation may in addition to demographical variables be done by qualitative and quantitative methods (Slater 1995). Based on extensive qualitative research, Jacobsen (1996) could determine 5 different receiver life styles and personality types in an antialcohol health information campaign, each of which had different rates of success as viewed from a sender perspective⁹. For those who carry out the campaigns, health is often a means to avoid disease, and health is also viewed as a value of life. These views are however shared by only a fairly

⁹ Analyses at an «everyday cultural level» showed: 1: Life style analyses can be used to differentiate between different person's interpretation and handling of campaign messages. 2: If it is a wish to continue campaign activities, it is possible to construct hypotheses how health information messages will be received, and how future messages will have to be formed in relation to life styles (Jacobsen 1996 p 178).

small subgroup of the target group. That is people who in advance are motivated to a healthy life style, and who easily can incorporate the advice in their everyday life. Antismoking campaigns are best received by non-smokers (Bauman *et al* 1989, Glynn *et al* 1991). It is reasonable to assume that a very technical message from NRPA may be best received by people thinking in «rational» ways. Some survey data indicate that the demand for information increases with increasing background knowledge assessed on the basis of education level (Tønnessen *et al* 1995, Hasst 1997). In a quantitative psychometric study in Norway, Mårdberg (1996) tried to identify homogeneous clusters based on dependent variables on risk perception, emotional reactions, technical knowledge etc. The group with highest self-assessed «knowledge of radiation» expressed fairly low trust in information, and those expressing very low need of information reported fairly low levels of radiation knowledge. A special interesting group neither understand, nor trust information, nor inform themselves. Definition of critical subgroups may be important, as tailoring messages on such terrain is otherwise a challenge!

It is often noted a reluctance in the public to address the radon problem seriously, even though the radon radiation doses to the public are among the highest encountered in many countries. There has often been noted an association between radon knowledge, radon concern and information seeking (Kennedy *et al* 1991), and such people were more likely to test their homes. However, health values and radon concern were only weakly related, whereas people with internal locus of control¹⁰ were more likely to have high radon concern. Issues of controllability, locus of control, radon testing and radon mitigation may indicate a need for audience segmentation on a psychological base.

In general, in a lack of a strategy including audience segmentation, the information from NRPA may have affected subgroups negatively. General survey methods may fail to detect such effects in a general favorable public reaction, despite the fact that reactions in small subgroups may be severe. The NRPA has some experience of this in relation to small ethnic groups.

Practical advice

Practical advice for the individual may be of importance, and is probably a right covered in the principal aims. These may in cases of nuclear emergencies include dietary advice, agricultural method advice etc. The effectiveness of dietary advice and agricultural countermeasures on collective Chernobyl radiation doses has been clearly shown in Norway (Strand 1995), and the importance also in a coping perspective has been evident in Russia (Tønnessen *et al* 1996). Moreover, survey studies in Norway have identified a demand for such practical advice (Tønnessen *et al* 1995). For several non-ionizing radiation issues, practical advice may be important, e.g. on sun tanning, mobile telephones and power lines, despite the fact that public worry does not necessarily reflect the numeric risks. It is therefore comfortable that 20% of the coded items included practical advice, in a situation with no major emergency.

Nevertheless, as no targeting or audience segmentation has been attempted, it is difficult to conclude whom these practical advices have been intended to. Practical advice is requested by the public in most of the Norwegian survey studies, whereas practical advice intended for e.g.

¹⁰ Briefly, a feeling of controlling the situation, instead of being controlled (external locus of control).

county administrators may contribute to the 20%. It is a pity that no audience or target group code was specified in the code scheme.

Principle I: Communication

The communication principle implies that the administration and its users are regarded as equal partners, who alternate as senders and receivers of information (Annex I), as may be the case in personal communication and conversation. The Head of information regards this principle to be very important. It must be assumed that this ideal is at least partly realized when the public contacts the NRPA by telephone or mail. Such contacts are not covered in this study, but are numerous. Even important problems may be solved during a telephone call. However, there is very little record kept of these interactions.

In mass communication and for press releases etc. the two-way communication principle may be impossible to fulfill in practice. The general aims point to the public or citizen as the target for communication and information. But according to the Head of information, the activities are mainly directed to other actors such as governmental agencies, the media, and the educational system, who then, it is expected, will disseminate the information in turn. This communication process may be referred to as the two-step hypothesis of media influence, which points to a message being transferred from media to opinion leaders, and from opinion leaders to the individual citizen (Waldahl 1992)¹¹. This of course incorporates increased possibilities for flaws and misunderstandings, and for restricted feedback. Individuals contacting the NRPA directly give however some indications of the information needs in the population, although not recorded systematically¹². Survey studies also contribute to the knowledge of public information needs and satisfaction with the information given (Haast 1996, Tønnessen *et al* 1995) as advised by the Norwegian Central Information Service (Annex I).

Information, communication and persuasion

All information is not communication, although all communication contains information. Main principles I and III implicate that the information messages should be neutral and correct, giving at least possibilities for true bidirectional communication. In cases of scientific uncertainty and/or different beliefs and value judgments, however, messages will in practice be flavoured by the sender perspective. And in emergency situations, the messages will be connected to actions which may be enforced upon the public. In public relation, four levels of communication may be described: 1: Press agency/publicity (closely related to advertizing, promotion or information of an organization or product, or propaganda¹³). 2: Public information (one-way dissemination of information). 3: Two-way asymmetric (characterised as «science-based persuasion» and with active use of feedback), and 4: Two-way symmetric (mutual understanding rather than scientific persuasion) (Grunig & Hunt 1984). According to

¹¹ Høyer (1989) has described a situation with three actors (informant, media, receiver) as two sets of trade or exchange of common interest. In persuasion, another two-step process has been described as well: the receiver first assesses the position advocated by the message, and attitude change occurs after that judgment (O'Keefe 1990 p 30).

¹² NRPA may be advised to develop a checklist of themes or issues, in order to document concerns by callers.

¹³ Propaganda is a form of communication that is different from persuasion because it attempts to achieve a response that furthers the desired intent of the propagandist. Persuasion is transactive and attempts to satisfy the needs of both persuader and persuadee (Jowett & O'Donnell 1992 p 1).

the interview and the analysis of the products, the practice of NRPA seems to be mainly of type 2 or 3, despite some shortcomings regarding feedback.

Waldahl (1995) points out that it is important to remember that any emergency situation has several phases, each with its own demands to public information strategies. This means for instance that messages issued in a real emergency situation must give coordinated and up-to-date practical information, while messages in stable preaccident phases can pay more attention to background information trying to establish a relationship of confidence between authorities and the public. Experience from the Goiânia accident also stresses the importance of different needs during different accident phases regarding information processes (Curado 1996). Another model view may be that of Skjervheim (1976), differentiating between *to convince* and *to persuade* (*å overbevise* og *å overtale*). Persuasion implies an assymetric relation, whereas to convince is a more symmetrical relation. In this context, the practice of the NRPA seems to be close to persuasion, at least when dealing with emergencies. In a crisis situation, information may take the form of orders, and the Crisis committee for nuclear accidents is even authorized to order evacuation of small communities (Naadland & Stranden 1995). This does not necessarily have any negative implications, but it is contrary to the ideal of mutual communication as formulated in Annex I.

It is evident from the interview, that coordinating the information in nuclear emergencies through the Crisis committee, where the message content in fact is decided by the committee, is part of the strategy. In the context of public relation types mentioned above, type 1-2 may be preferred in crises and 3-4 under stable circumstances. Thus, crisis information resembles to some extent propaganda in the sense that it tells people what to think about and how to behave. Propaganda is not necessarily an evil thing, and must be evaluated within its own context and its purpose. External propaganda may also be created for internal consumption, to bolster morale within the organization (Jowett & O'Donnell 1992). But it is in contradiction with the general communication principle of the Government information policy, which probably has limited relevance for crisis purposes.

Principle II: Active information

The active information principle means that the administration must itself inform the public, actively and systematically, not according to the agency's own premises, but on the basis of the needs and assumptions of the users, especially where information on rights and obligations is concerned.

The coded material in this study is mainly of an active nature, as only 1 item (1997) was coded as reaction to an event (Annex III). Also in the interview, the Head of information argues that an active strategy is maintained. Especially in cases of emergency, one of the central ideas is to control public information by a centralized active strategy¹⁴. Nevertheless, he also expresses that lack of resources results in much too little external information. This seems to be relevant especially for the production of basic materials from the professional

¹⁴ «The solution in such a situation is not to be found in a centrally directed information monopoly, which will have small chances of success in democratic societies. However, the establishing of a centre of information can still be an important measure to prevent informational chaos if the centre has as its purpose to answer questions from the public, gather facts and evaluations from experts and other relevant sources, keep in contact with the media, and keep the total informational activity under surveillance» (Waldahl 1995).

departments. A previously mentioned survey study also concludes that the NRPA was approachable for the media, whereas the threshold for public access was too high: the public was not informed sufficiently about where to obtain relevant information (Haast 1996).

In addition, the interview also reveals that the most important task of the Head of information is to assist the media with background data, and to be instrumental in establishing contacts with the relevant professional collaborators. This is probably more characteristic of a reactive than an active strategy. Resources are put into monitoring newspaper coverage on radiation issues by subscription to an outside service for about 20 000 \$ a year. Combined with the fact that much of the information not covered in this study (telephone and letter answers to public calls etc.) by nature are reactive. The overall activeness may be cast in doubt.

Principle III: Comprehensiveness

«Principle of comprehensiveness» is a translation of the Norwegian «helhetsprinsippet». Both in English and in Norwegian the word may have several meanings under different circumstances¹⁵, but in this context the principle is described very close to coordination: «To a member of the public who needs information, it normally does not matter much which authority it comes from, and the principle entails close cooperation between sectors» (Annex I). During the Chernobyl accident, different messages from different sources led to confusion and an information crisis (Hernes *et al* 1986). This experience is the base for the establishment of a centralized information of the Crisis committee, which enables all authorities «to speak with one voice».

The Norwegian government has had in the last years a special action program for nuclear safety and the environment, oriented specifically towards the situation in northwestern Russia. Information is an integral part of this program. The press seminar coded in the present material was, together with some press releases, the major task in a so-called «Information campaign on nuclear problems and accident preparedness in the northern regions» (the campaign was not directed towards the Chernobyl commemoration, but was obviously timed to coincide). Also a survey study on public attitudes in the northern counties was done, with a «baseline» measurement in January and an «effect» measurement survey in June 1996. In addition, several journalists and authorities were interviewed for their experience. By this, it was hoped to trace effects of the information campaign.

The evaluation of this NRPA information campaign has been published previously (Haast 1996). The journalists were generally satisfied with the information on nuclear preparedness and Chernobyl matters from NRPA, which contributed «to some degree» to the coverage of these issues in the media. However, the impact of press releases may be minor, despite the fact that NRPA was considered rather active. The journalists preferred to get such information from the NRPA and not from the county administrators, although they were prepared with the same material. The county administrations, ministries and NRPA considered the information coordination to add to comprehensiveness, but this could not be traced with any certainty in the public. The main conclusion was that the campaign did not have any significant effect on the public attitudes to nuclear matters. Nevertheless, Haast (1997) concluded that because of

¹⁵ Completeness, totality, universality, extensive, coherence, intelligibility, easiness, clearness etc.

the consistency in information from different agents in the emergency preparedness system, the principle of comprehensiveness was met.

Controversial issues

By asking our staff colleagues, most of them did not hesitate to define «comprehensiveness of information» (helhetlig informasjon) as «information covering most different and even controversial aspects and views of an issue, so the citizens are allowed to make their own decisions». Radiation issues do not always have a single truth. Thus, the situation with a single sender with credibility may be replaced with many nonauthorized sources (Koefoed 1990). This was the case during the early phases of the Chernobyl accident, where different messages from different sources were considered a serious problem (Hernes *et al* 1986), and prompted the information monopoly under crisis circumstances mentioned above.

In this context it is interesting that according to a 1993 Norwegian survey (Tønnessen *et al* 1995) close to 50% of the population would prefer an information policy that allowed different meanings and views to be distributed, whereas 50% preferred waiting until consensus among experts had been reached. The comprehensiveness principle may support the former if interpreted one way, but probably support the latter if interpreted as in Annex I. This diversity in demands further accentuates the need to address the question of audience segmentation based on relevant variables as e.g. education, news media preferences etc.

The acceptance of controversial issues is dependent on the trustworthiness of the informing agency. Sandman *et al* (1993) conducted experimental studies on reactions to different agency messages on risk of pollution, either «responsive to citizens' risk concerns» or «unresponsive». News stories filled with distrust and controversy led to greater perceived risk than stories not containing these factors, even though the distinct risk information was held constant. They argue that the «outrage» factor is important, and risk mitigation may be obtained if trustworthiness is maintained. It may be debated whether the centralization of crisis information intended in the nuclear preparedness system will add to trustworthiness, or carry a risk of adding to outrage.

In health information, a demand for holism and totality is often expressed, and «totality» is also a possible understanding of comprehensiveness. Holism is however not an unequivocal term in neither a philosophic nor in a medical or a nursing context. Numerous concepts of totality are applied to health and disease by different professional and non-professional («alternative medicine») persons¹⁶. Little is known to what extent very rational information on hard facts of natural science is received in relation to symbolic values. Vettenranta (1996) argues that Chernobyl news on Norwegian TV in 1986 was based mainly on technical rationality, while viewers constructed meaning founded on symbolic cultural rationality. Apocalyptic rhetorics in the media might certainly have added to this, and references to Hiroshima and Revelations of John were not uncommon. It will probably not be possible to

¹⁶ In non-professional circles, at least three different views of holism may be found: 1: A psychological approach that maintains that the psyche determines physical condition. 2: A spiritual approach which focuses on a person's (lack of) integration into a spiritual reality. 3: A physical approach consisting of an Oriental and a European section. The former employs physical manipulation, food and herbs to reestablish a deeper balance in the individual. The latter relates the individual to the physical environment and emphasizes nutrition, herbs and exercise. The underlying element in all is that to strengthen the individual's own healing powers (Nielsen 1988).

tailor a public information strategy to cover such aspects, although they probably will flavour the interpretation of messages. But the information messages will be difficult to give a coherent form even in a technical rational frame. Several inherent contradictions within a message will inevitable arise in a radiation crisis (Waldahl 1995)¹⁷, and different views will probably arise also within the emergency staff.

Principle IV: Line management

Whoever is responsible for results in a particular area must also have responsibility for information (Annex 1). This, together with the communication principle, is regarded as the most important by the Head of information. This seem also to be the case, as specific comments in general are provided by the scientist or project manager him/herself. The Head of information is not a press spokesman and in principle does not comment issues, and press releases etc. are based on the information from the professional departments. But the line management principle is not operable in general NRPA policy questions. It is difficult to see any clear definition of such policy questions from the interview, and the coded material give no clues to the definition either.

An interesting point is the line management principle in relation to the different professional departments. In many situations this may directly oppose the comprehensiveness principle as defined in Annex I. A certain topic, e.g. radon, may be viewed as primarily a scientific issue, as a matter of different measurement and/or mitigation strategies, or a question of policy of a governmental authority. There clearly is a risk of different messages from different departments, preventable mainly by the informal communication among professionals in a rather small agency. Selfimposed comprehensiveness may be problematic in relation to the wish of around 50% of the population to receive even contradictory information (Tønnessen *et al* 1995).

Principle V: Information as a management responsibility

Although managers may delegate particular tasks, they can according to this principle not delegate responsibility for information. Managers are also responsible for the implementation of information policy at their own workplaces. According to the interview, this seems to be the case at the NRPA, in the sense that the Director general is ultimately responsible for the information. The Director general is also chairman of the Crisis committee for nuclear accidents, who in fact is allowed to decide the public information content, and thereby takes responsibility for information also under crisis conditions.

Another aspect of the management principle is that the Director general shall ensure that information is an integrated part of the activities. But this has implications for the resource situation. The Head of information both considers the information budget insufficient, and

¹⁷ The demand for information in a nuclear emergency is characterised by several contradictions. One is between the expert with his or her scientific insights, and the layman with his or her lack of understanding of complicated physical processes. Another is between the wish of the authorities to maintain a coordinated information strategy, and the media's demands for free flow of information. A third is found between a democratic principle that emphasises the ideal of equality even in a state of emergency, and a hierarchical principle that emphasises that a crisis requires leadership based on competence and responsibility. Finally, a fourth contradiction lies between a strategy that, wanting to calm people down, will tend to play down the gravity of the situation, and a strategy that, wanting to catch the attention of the public, will dramatise unnecessary (Waldahl 1995).

realizes that the work-load capacity of the scientists to make basic data available for the information is too limited. There is clearly a view among several of the scientists that this should be more a duty of the Information unit. So both sides are referring to lack of resources. The budgetary situation in many Norwegian research establishments and administrative units, including the NRPA, is astonishingly strained, and the principles of information as an integral part of any project may be too idealistic. It seems, that NRPA is fulfilling the principle to the degree which can be expected.

Crisis information

The Head of information focused in the interview on the differences between crises and/or emergency information, and information under normal conditions. The 5 governmental central information principles are apparently not designed according to a crisis context. Quite to the contrary, specific information principles with an obligation of the crisis committee to decide the information content are covered in the establishment of the Nuclear emergency preparedness system. A discussion of these problems may be found under the heading of Principle I: Communication.

CONCLUSION

As long the NRPA has no complete written information strategy, the basic study aim to compare this with the reality of the information products can not be fulfilled. However, by accepting the Central Government information policy as its point of departure, together with the views expressed by the Head of information in the interview, a sketch of such a policy may be derived. This is therefore the base of the following conclusions.

Principal aims

The information of NRPA is definitely aimed to be in accordance with the democratic intentions that every resident is informed of his or her rights, and has genuine access to information on radiation protection activities. Whether this is achieved is another thing. The target for the information activities of the NRPA is not clearly defined. The Information unit does not cover information to individuals, and is acting through secondary sources as media and local authorities. This two-step information strategy leaves it difficult to judge the access to and relevance to needs and expectations of the public.

Resources for the Information unit are regarded as insufficient by the Head of information, and increased assistance from the professionals is desired. The active information by the professionals seems limited (seems to have a reactive rather than an active profile), and the professionals are assisted in only a limited way by the Information unit. Thus we do not know much about the effectiveness of total information from the NRPA. However, information related to nuclear preparedness and crisis information seems well covered.

Information principles

A distinction between crisis and emergency information versus information under normal circumstances is mandatory, and the principles applicable are different. The 5 general principles of the central governmental strategy shall be maintained in ordinary information, whereas the crisis information is strongly centralized and controlled. This may be logical. Of

the 5 principles for ordinary information, principles IV: Line management, and V: Information as a management responsibility are probably maintained, although the resource situation may interfere with this objective and aim.

The IInd principle of Active information is probably reasonably well undertaken in the NRPA information segment controlled by the Unit of information. However, information to the individual citizen contacting the NRPA is undertaken by the professional departments, and therefore moments of a reactive strategy can be identified. The principle, as expressed by the Norwegian central information service (Annex I), defines the public as the target population. It is not clear whether an information strategy targeting the media primarily and the public only secondarily is in accordance with the principle.

The principles I: Communication, and III: Comprehensiveness are those which are difficult to assess based on the interview and the coded material. This is partly because the meaning of these principles are not clear cut, even by sticking to the interpretation given in Annex I. As a broad conclusion, it may be argued that the communication principle is generally met in the information outside the crisis context, whereas crisis information is a more strict one-way task. The principle of comprehensiveness is impossible to evaluate in the meaning defined in Annex I, except that in crisis situations it is strongly aimed at. If viewed in the meaning of «completeness» or «holism» it is definitely not met, as policy and maybe even scientific «truths» are subject to decisions.

Crisis information

Crisis information is a well elaborated system, which, however, has not been tested, as no crises have appeared after the Chernobyl accident.

Recommendation

In defining an information strategy for the NRPA, there seems to be a need to define and operationalize better the five principles of the governmental strategy, in order to make them applicable. In particular, a discussion of the differences between crisis and ordinary conditions, and between two-step or direct public communication, is advisable. Moreover, definition of target population, the question of audience segmentation, and how to handle different professional views outside crisis periods, needs to be addressed.

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APPENDIX I

Norway's Central Government information policy - an introduction to the main principles.

This is a brief presentation of the Norwegian Government's information policy. That policy was laid before the Storting in the autumn of 1993, as part of the Ministry of Government Administration's Budget Proposition. A fuller description can be found in a booklet published by the Ministry in December 1994. Central Government information policy comprises the aims, principles, norms and rules for the implementation of central government information activities.

PRINCIPAL AIMS

The principal aims are to

- * ensure that each resident and enterprise has genuine access to information on public sector activities
- * ensure that every resident is informed of his or her rights, obligations and opportunities to participate in the democratic process.

Information policy is based on five principles, which must be viewed in relation to each other.

COMMUNICATION

The communication principle implies that the administration and its users are regarded as equal partners, who alternate as senders and receivers of information. The principle means that the administration must be capable of putting itself in the receiver's position, and on that basis supply suitable information. User surveys provide the necessary platform in that connection. It is not sufficient for the administration merely to send out information. The reactions of the public must also form the basis for systematic feedback to the various levels of the administration. This principle places great demands on the flow of information and on cooperation between different levels of the administration.

ACTIVE INFORMATION

It is not enough for the public to have access to information about the workings of the administration. The active information principle means that the administration must itself inform the public, actively and systematically. A prerequisite is for information to be designed, not according to the public service's own premises, but on the basis of the needs and assumptions of the users. The threshold for obtaining information from the authorities on one's own initiative must be lowest for under-privileged users, especially where information on rights and obligations is concerned.

COMPREHENSIVENESS

The principle of comprehensiveness implies that information from central government must as far as possible be coordinated, so that receivers perceive it as a whole. To a member of the public who needs information, it normally does not matter much which authority it comes from. It should accordingly be possible to obtain all the information that may be relevant in a given situation from the first authority applied to. To be able to safeguard their interests, it is important for members of the public to have a full picture of the relevant information available. The principle entails close cooperation between sectors.

LINE MANAGEMENT

Whoever is responsible for results in a particular area must not only have the resources and tools at his or her disposal with which to achieve the objectives, but also have the authority to use them. Like financial, legal, physical and organisational means, information must be viewed as an instrument to be used by Ministries and services. This means that responsibility for information must lie where the administrative responsibility lies.

INFORMATION AS A MANAGEMENT RESPONSIBILITY

The principle of information as a management responsibility follows logically from the line management principle. In other words, although they may delegate particular tasks, managers can not delegate responsibility for information. The management is responsible for seeing both that information is used professionally and ethically, and that the administrative body in question has sufficient information expertise. Managers are also responsible for the implementation of information policy at their own workplaces. In accordance with the principle of information as a management principle, the Government has recommended the adoption of the following general guidelines:

- * Information is to be an area in which senior central government officials must report results.
- * Information managers should be attached to the senior management as advisers.

ONE OF SEVERAL INSTRUMENTS

It will be major challenge to help to ensure that information is seen to be one of a number of instruments with which an administrative body arrives at its solutions and reaches its objectives. Each agency must therefore itself develop the measures and skills it needs to make the most of the opportunities provided by information as an instrument.

INTERNAL AND EXTERNAL INFORMATION

Good internal information is a precondition for good external information. The right hand must know what the left hand is doing. Every employee in an organisation is supplier and receiver of information. For a body to pick up signals from the public, and thus to contribute to genuine communication with the world outside and to further development according to user needs, it must have good internal communication.

The planning, realisation and evaluation of information work should therefore take the aims and principles of central government information as its point of departure.

HOW CAN THE CENTRAL INFORMATION SERVICE HELP?

The Central information service is the central government administration's specialist body where information-related questions are concerned. The Service initiates measures in central government bodies, and advises them and provides expertise. It contributes to the implementation of central government information policy. Its principal assignment include the building up of expertise, the transmission of experience, evaluation, the mediation of knowledge, and maintaining contacts with research environments. In keeping with current information policy, the Central Information Service can help Ministries and services with:

- * analysis of their information work
- * strategic information planning
- * evaluation of information work
- * organisation of the information function.

The Central Information Service also helps with the production and showing of TV spots and with public announcements of new rights and obligations. The Service is also a source of advice on the guidelines for government advertising, is engaged in the development of local and regional networks, and runs the Central Information Service Press Centre and the Central Information Centre.

Norwegian Central Information Service
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APPENDIX II

Code scheme for classification of information products.

TYMAT (Type of material)

- 1 Press release
- 2 Press file (dossier etc)
- 3 Reports to the public
- 4 Reports to the scientific community
- 5 Newsletter
- 6 Press reviews
- 7 Press seminars
- 8 Documents to Administrations, decision makers, Government
- 9 Other/ not possible to classify

Date of publication

DAY	01 - 31
MONTH	1 - 5
YEAR	1996=1 1997=2

VOL (Approximate number of words if applicable)

- 1 <100
- 2 100-500
- 3 500-1000
- 4 >1000
- 9 Not applicable (e.g. not written material)

WHY (Reason for release)

- 1 Legal obligation
- 2 Reaction to an event (incident, accident, demonstration, strike ...)
- 3 On the defensive/ *a posteriori* (reply/response to accusation or pressure groups, public, leaders...)
- 4 Information (technical measures, visit of officials, routine information ..)
- 5 Minutes, conclusion of meetings, congress sessions etc
- 9 Other/ not possible to classify

Theme

TEMA1 (Major theme)	1 - 10
TEMA2 (Secondary themes)	1 - 10

Theme list:

- 1 Chernobyl
- 2 Other incident or accident related to specific nuclear power installation
- 3 Radiation data (levels/doses/environmental release, deposits, etc.)
- 4 Nuclear waste from civilian applications
- 5 Nuclear waste from military applications
- 6 Nuclear arms or military technology (e.g. submarines) or arms testing
- 7 Radiation applications (medical use, industrial use, food conservation, etc.) (not energy uses)
- 8 Radiation /nuclear risk and/or risk issues in general (public/worker health aspects etc.)
- 9 Other/not possible to classify
- 10 Radiation accident preparedness

Notes:

3 means data from specific observations on environmental levels or personal doses

5 means also military applications that are not yet waste!

6 means all other applications aside from energy production and military, including incidents/accidents

7 means general, background or explanatory information about risk, including worker dose levels set by ICRP

9 keeping 9 always as "no information" in our rating scheme.

GEO (Geographic focus)

- 1 Domestic
- 2 Foreign
- 3 Both
- 9 No geographical focus mentioned

Consequence focus

DEMO	Demographic target groups affected	1: Yes	0: No
HEALTH	Human health effects	1: Yes	0: No
PSYSO	Psychological/Social effects	1: Yes	0: No
FOOD	Impact on food	1: Yes	0: No
ENVIRON	Environmental impact	1: Yes	0: No
ECON	Economic problems	1: Yes	0: No

Descriptive features

TECHN	Technical information	1: Yes	0: No
DESCR	Pure description	1: Yes	0: No
SCIEN	References to scientific research	1: Yes	0: No
REGU	Regulatory issues/ authority issues	1: Yes	0: No
ADV	Practical advice offered	1: Yes	0: No

TONE (Tone of document)

- 1 Alarming
- 2 Reassuring
- 3 Both
- 4 Neither
- 9 Not applicable/ other type of material

APPENDIX III

Descriptive statistics of the Norwegian material

TYMAT

Per cent

Type of material	YEAR		Total
	1996	1997	
1 Press release	40	40	40
3 Reports to the public	7	-	4
4 Reports sci com	7	10	8
5 Newsletter	20	-	12
6 Press reviews	7	-	4
7 Press seminars	7	-	4
8 Adm, decision, Gov	13	30	20
9 other/not classified	-	20	8
Total	100	100	100
N =	15	10	25

VOL

Per cent

Appr. Number of words	YEAR		Total
	1996	1997	
2 100-500	53	40	48
4 >1000	40	60	48
9 Not app	7	-	4
Total	100	100	100
N =	15	10	25

WHY

Per cent

Reason for release	YEAR		Total
	1996	1997	
1 legal obl	-	10	4
2 reac to event	-	10	4
4 info	100	60	84
5 min, con meet, cong sess	-	20	8
Total	100	100	100
N =	15	10	25

TEMA1**Per cent**

Major tema	YEAR		Total
	1996	1997	
1 Chernobyl	13	-	8
2 other pow inst	-	10	4
3 radiation data	20	20	20
7 radiation app	-	20	8
8 risks	7	10	8
9 other/not classified	13	20	16
10 rad accident prep	47	20	36
Total	100	100	100
N =	15	10	25

TEMA2**Per cent**

Secondary tema	YEAR		Total
	1996	1997	
1 Chernobyl	33	-	20
3 radiation data	13	-	8
7 radiation app	-	10	4
8 risks	13	10	12
9 other/not classified	33	70	48
10 rad accident prep	7	10	8
Total	100	100	100
N =	15	10	25

GEO**Per cent**

Geographic focus	YEAR		Total
	1996	1997	
1 Domestic	93	80	88
3 Both	7	20	12
Total	100	100	100
N =	15	10	25

TONE**Per cent**

Tone of document	YEAR		Total
	1996	1997	
2 Reassuring	7	20	12
9 Not app/other	93	80	88
Total	100	100	100
N =	15	10	25

CONSEQUENCE FOCUS

Counts

Consequence focus		1996 Counts	1997 Counts	Total Counts
Demographic target groups affected	0 No	12	8	20
	1 Yes	3	2	5
Human health effects	0 No	8	7	15
	1 Yes	7	3	10
Psychological/Social effects	0 No	11	10	21
	1 Yes	4	-	4
Impact on food	0 No	12	10	22
	1 Yes	3	-	3
Environmental impact	0 No	9	7	16
	1 Yes	6	3	9
Economic problems	0 No	13	10	23
	1 Yes	2	-	2

DESCRIPTIVE FEATURES

Counts

Descriptive features		1996 Counts	1997 Counts	Total Counts
Technical information	0 No	5	4	9
	1 Yes	10	6	16
Pure description	0 No	3	1	4
	1 Yes	12	9	21
References to scientific research	0 No	7	4	11
	1 Yes	8	6	14
Regulatory issues/authority issues	0 No	8	5	13
	1 Yes	7	5	12
Practical advice offered	0 No	12	8	20
	1 Yes	3	2	5

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